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EDITORIAL NOTES

In connection with the meetings of the American Association for the Advancement of Science, held at Chicago recently, a new organization, known as the American Nature-Study Society, was completed. Previous to the time of meeting there had been appointed a committee on organization which committee had met and agreed upon the plan of organization and constitution to be recommended to the general meeting. The general meeting quickly and favorably disposed of the plans and constitution as recommended, elected officers, and proceeded at once to the discussion for which they had met. This discussion is the feature of the meeting in which, in this connection, we are particularly interested.

The topic announced was "The Relation of Nature-Study to Science-Teaching." Four widely known educational men had been invited to open the discussion, and the addresses from these men were followed by some twenty-five shorter discussions. These shorter discussions were contributed by university, college, normal-school, high-school and elementary-school people proportionately in the order in which these groups are mentioned. The nature of the general association with which this society met was such as to make the representation of elementary-school teachers in this discussion less than was desired. The following partial summarization gives those points which give promise of a more tangible organization and consequently more valuable result from work in nature-study.

If "science is organized knowledge," nature-study, high-school science so-called, and some so-called college science cannot make serious claim to inclusion in the subject. But if in education science is a process of organizing knowledge, that is of solving problems and of relating results to one another, all the above must be included. Science is kinetic, not static; and any definition which fails to recognize the method of science leaves out the moving force which educationally is the greater part of the subject. The child who sets himself to find out about any particular natural phenomena has set himself a problem in science of the same nature as the problem which is attacked by the student doing research work on his doctor's thesis. Of course the problem is very, very much more simple but to the child it has the same features of unexplained phenomena. To explain these he must observe more phenomena, and infer and test his inferences. The research student finds his work differing from this only in degree. Indeed, sometimes the research student has furnished for him a much larger part proportionate to the amount of data needed than does the child. If we consider carefully some of the so-called pieces of research work, we shall see in them little beside an attempt to identify in a new or partially new combination of data, principles which have been clearly demonstrated in other quite similar combinations of data. Few research men are really great enough to enable them to work with combinations of data largely unstudied previously. This is not to be interpreted as meaning that verification work is not valuable and necessary, nor that a piece of such work does not become a problem to the doer, but it does assist in showing that in higher work as well as in grade work the problems may vary in quality. So far as this quality is concerned its extremes are found in the nature-study work of the elementary schools, in the research work of the university, an din all intervening science. So far as the essence of educational science is concerned there is no line drawn between nature-study and science. If, as some maintain, nature-study is wholly unlike science in its method and result, it must fail to present nature's problems, must fail to stimulate and extend inquiry into the natural features of our environment with which our lives are inextricably related. The "exposure" and "observation" methods of teaching nature-study could be no other than disappointing since they omitted the problem aspect which really gives life and meaning to the work. Merely seeing, is wholly unlike seeing with an interpreting eye and mind, and is inhibitory to interpretive seeing.

One of the prominent educational purposes of nature-study, therefore, is to establish and develop economic and trustworthy methods of problem solving. This involves that the problems attacked must be real to the pupils and must be worth while. They must be the pupils' own problems, or must be so presented to them that the pupils feel interest in them. The best problems are those that come out of the daily life and associations of the pupils, the solutions of which bring a fuller significance to phenomena constantly observed.

In addition to this method purpose stated above, the materials acquired in nature-study furnish the concrete basis for further work of all kinds. Much advanced work loses a large part of its meaning because there is not sufficient concrete foundation to give it significance. No doubt this work would do much to make the immediate environment more attractive and to give a better interpretation of social life, and these are highly desirable. These are incidents to the larger function of supplying pictures, organization, knowledge, and processes, by means of which future thought processes may find material upon which to develop and which may enrich and organize this new material.

It must follow that if the above criteria are correct the teacher must select her material more definitely than "at random" or with the idea of preparing "busy work." One ignorant of nature or out of sympathy with it needs to begin to learn nature and thus develop sympathy, before beginning to teach it. One does not need to know all mathematics in order to teach elementary arithmetic, but one needs to have studied arithmetic at least and should have studied considerably beyond it. It is so in nature-study. Nature-study cannot be taught by those who have not studied it and who care nothing about it. It can, however, be very successfully taught by some teachers who have never had any formal courses in any natural sciences, but who of their own initiative (the best way of all) have developed insight into nature's problems and spirit.

O. W. C.